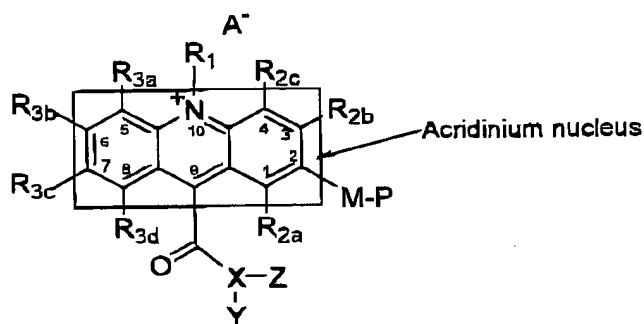


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Claims:

43. The chemiluminescent substrate of a hydrolytic enzyme,
 said substrate having the structure



wherein

P is PO_3Na_2 or a sugar moiety;

M is oxygen;

R_1 is selected from the group consisting of methyl, sulfopropyl and sulfobutyl;

R_{2a} , R_{2b} , R_{2c} , R_{3a} , R_{3b} , R_{3c} and R_{3d} , are hydrogen;

A^- is a counter ion for the electroneutrality of the quaternary nitrogen of the acridinium compounds, said A^- not being present if said R_1 substituent contains a strongly ionizable group that can form an anion and pair with the quaternary ammonium cationic moiety; and

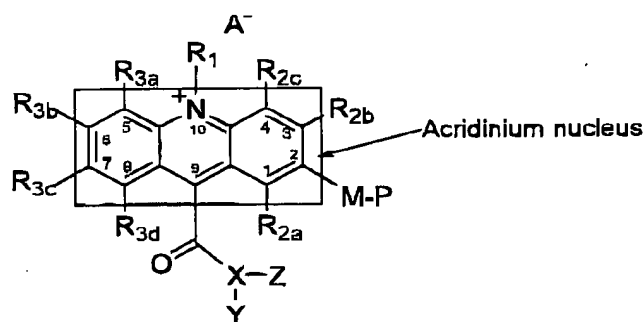
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X is selected from the group consisting of O, N or S,
 such that,

when X is O or S, Y is selected from the group
 consisting of phenyl, (2',6'-dimethyl-4'-
 benzyloxycarbonyl)phenyl, and (2',6'-dimethyl-4'-
 carboxyl)phenyl; and Z is omitted; and

when X is N, Z is toluenesulfonyl, and Y is
 carboxypropyl.

44. The chemiluminescent substrate of a hydrolytic enzyme,
 said substrate having the structure,



wherein

P is PO₃Na₂ or a sugar moiety;

M is oxygen;

R₁ is selected from the group consisting of methyl,

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sulfopropyl and sulfobutyl;

R_{2a} , R_{2b} , R_{2c} , R_{3a} , R_{3b} , R_{3c} and R_{3d} , are hydrogen;

A^- is a counter ion for the electroneutrality of the quaternary nitrogen of the acridinium compounds, said A^- not being present if said R_1 substituent contains a strongly ionizable group that can form an anion and pair with the quaternary ammonium cationic moiety; and

X is O; Y is selected from the group consisting of phenyl, (2',6'-dimethyl-4'-benzyloxycarbonyl)phenyl, and (2',6'-dimethyl-4'-carboxyl)phenyl; and Z is omitted.

45. The chemiluminescent substrate of claim 43, wherein

P is PO_3Na_2 ;

X is N, Z is toluenesulfonyl, and Y is carboxypropyl.

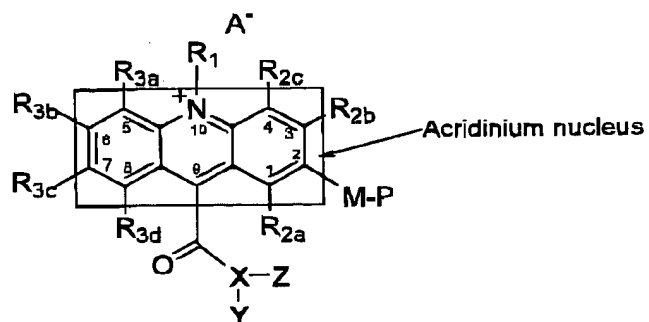
46. The chemiluminescent substrate of claim 43, wherein

P is PO_3Na_2 ;

X is S; Y is selected from the group consisting of phenyl, (2',6'-dimethyl-4'-benzyloxycarbonyl)phenyl, and (2',6'-dimethyl-4'-carboxyl)phenyl; and Z is omitted.

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Generalized Structure for Claim 43:



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1. Search structure examples when $X = O$. The following five compounds are also disclosed in the examples of the application.

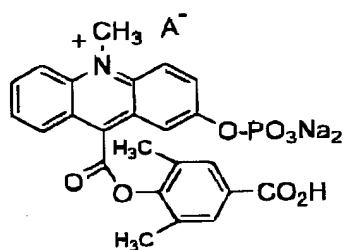


Fig. 1A

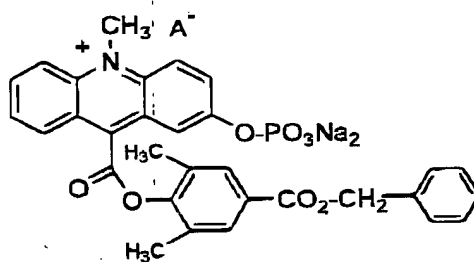


Fig. 1C

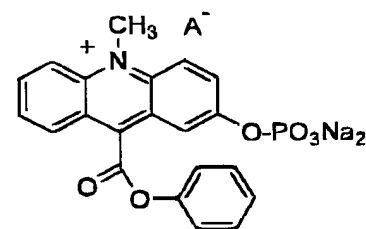


Fig. 1E

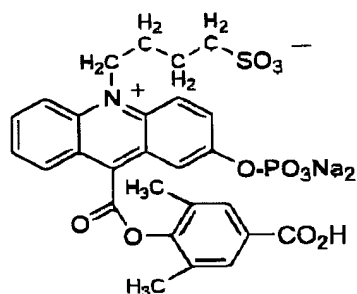


Fig. 1G

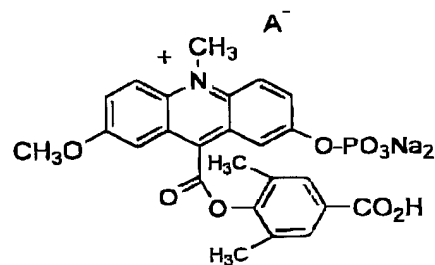
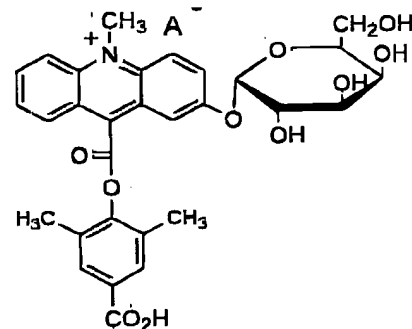
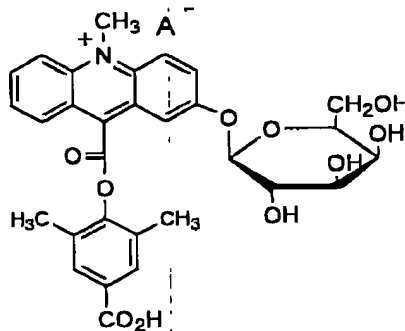
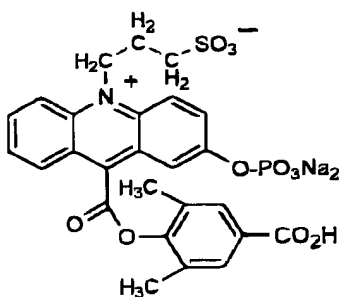


Fig. 1I

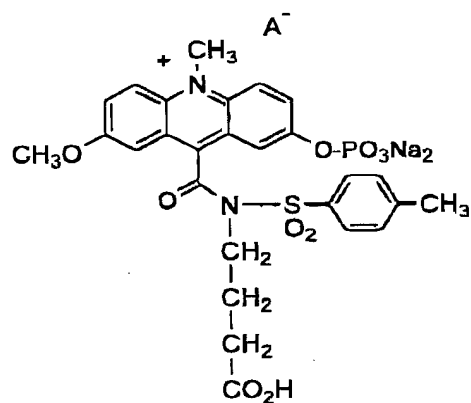
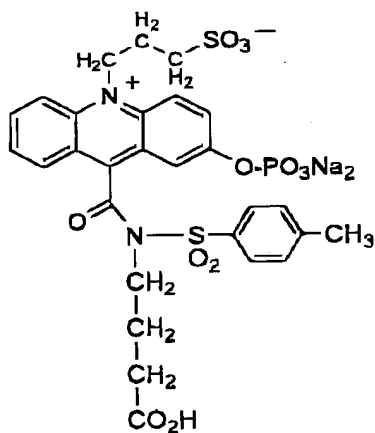
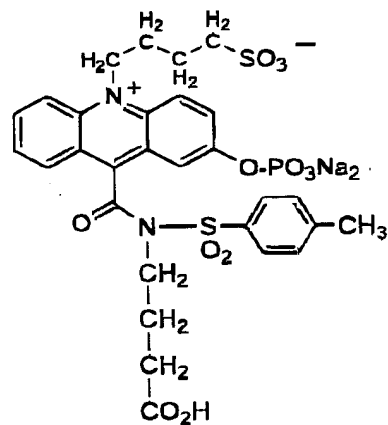
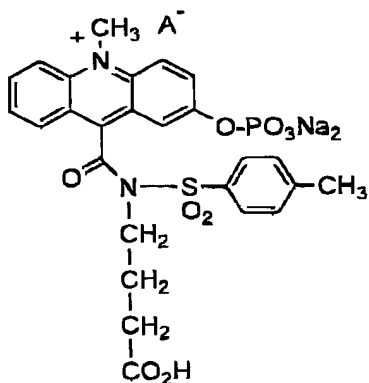
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Additional search structure examples when X = Oxygen:



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2. Search structure examples, when X = Nitrogen



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3. Search structure examples when X = sulfur.

